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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,936	02/26/2002	James E. Roddy	83618NAB	4071

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EXAMINER

DANIELS, ANTHONY J

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/082,936

Applicant(s)

RODDY ET AL.

Examiner

Anthony J. Daniels

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 10-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5 and 11-21 is/are allowed.
- 6) ☒ Claim(s) 6-8, 10, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/24/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendments, filed 3/14/2005, have been entered and made of record. Claims 1-8,10-23 are pending.
2. Applicant's amendments to the specification and drawings have overcome examiner's objections in the previous office action.

Response to Arguments

3. Applicant's arguments have been considered and are addressed in the context of the rejections below.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claim 6 stands rejected under 35 U.S.C. 102(b) as being anticipated by Hjortzberg (US # 4,404,585).

As to claim 6, Hjortzberg teaches a digital camera (see Figure 1) comprising: a sensor array (see Figure 1, image sensor "14"); a color filter wheel (see Figure 1, four-quadrant color wheel "16"); and wherein said color filter wheel selectively transmits light associated with substantially non-overlapping four spectral regions (see Figure 1; Col. 3, Lines 38-42; {Examiner

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interprets non-overlapping spectral regions being the regions of the wheel, which transmit the yellow, cyan, red, or blue.})).

5. Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Dyck (US # 5,796,433).

As to claim 7, Dyck teaches a digital camera (Col. 3, Lines 33,34) comprising: a sensor array (Col. 3 Lines 66,67); and an electronically switchable electro-optic filter capable of selectively transmitting light from four spectral regions (Col. 8, Lines 27-48; *{The four spectral regions include red, blue, green, and white (inclusive of all spectral regions – see Col. 8, Lines 44-48.})).*

Claim Rejections - 35 USC § 103

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morishita (US # 4,281,339) in view of Neumann (US # 5,917,560).

As to claim 8, Morishita et al. teaches a digital camera (see Figure 1) comprising: a beamsplitter (see Figure 1, half and dichromic mirrors “4”, “10”, “15”); a first sensor array (see Figure 1, solid-state pickup device “8” which receives light from said beamsplitter in a first spectral region (see Col. 5, Lines 17-22); a second sensor array (see Figure 1, solid-state pickup device “13”) which receives light from said beamsplitter in a second spectral region (see Col. 5, Lines 25-32); a third sensor array (see Figure 1, solid-state pickup device “18”) which receives light from said beamsplitter in a third spectral region (see Col. 5, Lines 35-43); and a fourth sensor array (see Figure 1, solid-state pickup device “21”) which receives light from said

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beamsplitter in a fourth spectral region (see Col. 5, Lines 44-50); a color filter for blocking light of said first spectral regions (Figure 1, Y filter "6"); and wherein the first, second, third, and fourth spectral regions are substantially non-overlapping (*Examiner interprets non-overlapping spectral regions being the regions of the filters, which transmit the yellow, green, red, and blue.*). The claim differs from Morishita et al. in that it further requires that said beamsplitter be an X-Cube beamsplitter.

In regards to applicant's arguments on page 11, Lines 17-34, examiner respectfully disagrees. Neumann explicitly teaches an X-cube beamsplitter capable of splitting **incoming** light to its color components (Col. 1, Lines 43-47), as well as combining light. In light of the teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ an X-Cube beamsplitter as the beamsplitter of Morishita et al., because an artisan of ordinary skill in the art would have recognized that X-Cube beamsplitters provide for a more compact and mechanically stable optical configuration (see Neumann, Col. 1, Lines 65-67).

7. Claims 10,22,23 rejected under 35 U.S.C. 103(a) as being unpatentable over Rhodes (US # 4,286,285) in view of Hibbard (US # 5,382,976).

As to claim 10, Rhodes teaches a digital camera (Abstract, Lines 1,2) comprising: a first photosensor array (Figure 1, photosensor array consisting of red and yellow filters); a first color array comprising red and yellow color filters (Figure 1, array consisting of red and yellow filters); a second photosensor array (Figure 1, photosensor array consisting of blue and cyan filters); a second color filter array comprised of blue and blue-green color filters (Figure 1, array

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consisting of blue and cyan filters). The claim differs from Rhodes in that it requires a color filter array consisting of red and green color filters.

In the same field of endeavor, Hibbard teaches a color filter array consisting of red and green color filters (Figure 3) using the green color filters for luminance detection (Col. 3, Lines 12-15). In light of the teaching of Hibbard, it would have been obvious to one of ordinary skill in the art to replace a green color filter with the yellow color filter of Rhodes, because an artisan of ordinary skill in the art would recognize that green color filters have a strong correlation with luminance, and provide a large amount of information when performing color interpolation processing.

As to claim 22, Rhodes, as modified by Hibbard, teaches a color imaging device (see Rhodes, Figure 1, CCD “10”) comprising: a first sensor array (see Rhodes, Figure 1, sensor array consisting of red filters) and a first color filter for passing only light associated with a red spectral region (see Rhodes, Figure 1, array consisting of red filters), a second sensor array (see Hibbard, Figure 3; Rhodes, Figure 1, sensor array consisting of green filters) and a second color filter for passing only light associated with a green spectral region (see Hibbard, Figure 3; Rhodes, Figure 1, array consisting of green filters), a third sensor array (see Rhodes, Figure 1, sensor array consisting of cyan filters) and a third color filter for passing only light associated with a blue-green spectral region (see Rhodes, Figure 1, array consisting of cyan filters), a fourth sensor array (see Rhodes, Figure 1, sensor array consisting of blue filters) and a fourth color filter for passing only light associated with a blue spectral region (see Rhodes, Figure 1, array consisting of red filters).

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As to claim **23**, Rhodes, as modified by Hibbard, teaches a digital camera (see Rhodes Abstract, Lines 1,2) comprising: a first photosensor array (see Rhodes, Figure 1, photosensor array consisting of red and blue filters); a first color filter array comprised of red and blue color filters (see Rhodes, array consisting of red and blue filters); a second photosensor array (see Hibbard, Figure 3; Rhodes, Figure 1, photosensor array consisting of green filters and cyan filters); and a second color filter array comprised of green and blue-green color filters (see Hibbard, Figure 3; Rhodes, Figure 1, array consisting of green filters and cyan filters).

Allowable Subject Matter

8. Claims 1-5,11-21 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: As to claim **1**, the prior art does not teach or fairly suggest a color imaging device wherein blue, green, and blue-green spectral regions of filters on a sensor are substantially non-overlapping. As to claim **5**, the prior art does not teach or fairly suggest a color imaging device comprising a first digital camera comprising a color filter for filtering all light except that associated with a red spectral region, a second digital camera comprising a color filter for filtering all light except that associated with a green spectral region, a third digital camera comprising a color filter for filtering all light except that associated with a blue-green spectral region, a fourth digital camera comprising a color filter for filtering all light except that associated with a blue spectral region.

Conclusion

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9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (571) 272-7362. The examiner can normally be reached on 8:00 A.M. - 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AD
6/9/2005



NGOC-YEN VU
PRIMARY EXAMINER